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Reducing inequalities in doctor distribution

Literature review, Thai case study and policy recommendations

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Abstract

This paper seeks to examine the various schemes that have been used to address the global problem of inequitable distribution of physicians between urban and rural areas. A literature review and case study illuminate past strategies that have been successful as well as the strengths and weakness of one particular program.

Evaluation of the studies available and examination of the case study suggest a multidimensional, mixed methods approach, which combines rural recruitment and education, financial support and incentives and a strong social support network. The case study of the Thai Medical Women's Association's (TMWA) Rural Scholarship Program combines these aspects by recruiting women from rural backgrounds, supporting them financially by funding their medical education and living expenses and including them in an extended national and international network of women physicians to foster social and professional support. The case study offers valuable insights from all parties involved in the scholarship program, including the TMWA members, the scholarship recipients and the Thai Ministry of Health. While future research—especially longitudinal (for data on retention), context-specific and experimental studies—on this subject is still required, the educational, financial and social support methods identified can be recommended already, as they have been successful in the recruiting and retention of rural physicians thus far. These recommended strategies can be facilitated and strengthened by the combination of governmental and non-governmental programs, as is the case with the TMWA Rural Scholarship Program, where women are recruited from the pre-existing Collaborative Program to Increase Production of Rural Doctors (CPIRD), run by the Thai Ministry of Health. Policy recommendations will be made that may be useful to the TMWA, the Thai Ministry of Health and any other governments or organizations that are in need of strategies or programs to increase the recruitment and retention of rural doctors in their setting.

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Introduction

While the problem of inequitable distribution of healthcare professionals has existed for many years and contributes to the "gross inequality in the health status of the people particularly between developed and developing countries as well as within countries" (International Conference on Primary Health Care, 1978), there have been few successful schemes addressing the issue. The problem is compounded by the fact that the rural populations are often lower socioeconomic groups and are subsequently at higher risk for poor health (Marmot, Friel, Bell, Tanja & Houweling, 2008). One method of addressing this inequality in health is to address the inequitable access to physicians. A systematic review in the United States found that increasing "primary care physician supply was associated with improved health outcomes, including all-cause cancer, heart disease, stroke and infant mortality; low birth weight; life expectancy; and self-rated health" (Macinko, Starfield & Shi, 2007).

Though the asymmetrical distribution of healthcare providers exists worldwide, low- and middle-income nations often experience a more extreme skew than their more developed counterparts. In the United States, for example, the population is 80% urban, and 91% of physicians practice in urban areas (Grobler et al., 2009). In Thailand, however, only 34% of the population is urban (WHO, 2011a), yet 96% of medical doctors work in urban areas (WHO, 2011b). This leaves the vast majority of the population with very few healthcare providers.

Because there are so few healthcare providers in rural areas, those that do work in these areas are often overworked and understaffed relative to the large demographic areas that they serve, making the option of working in an underserved area even less desirable to the newly graduated doctor. In order to break this cycle and provide equitable access to healthcare for the vast rural population, external strategies are needed to recruit and retain rural healthcare workers.

Thailand has used a variety of strategies to attempt to combat the problem of skewed physician distribution. Most of the strategies identified in the literature review have been applied in Thailand with limited success, and few have been rigorously evaluated.

The most significant regulatory measure was taken by the Thai government in 1968, requiring all students who attend public medical schools—which are highly subsidized and comprise 11 of the 12 medical schools in Thailand—to serve the public in rural areas for three years upon graduation (Wibulpolprasert & Pengpaibon, 2003). Although these new physicians are still permitted to practice privately, they are encouraged not to by a special allowance of about 250 USD per month to keep them focused on the underserved, rural populations (Wibulpolprasert & Pengpaibon, 2003). In addition to developing the rural health infrastructure, the Ministry of Public Health in 1994 responded to the "internal brain drain"—the exodus of physicians to the cities from other parts of the country—by introducing a ten-year project called the Collaborative Project to Increase Production of Rural Doctors (CPIRD) (Wibulpolprasert & Pengpaibon, 2003). By recruiting 2,982 students between 1995 and 2006, the program has reached 99.4% of its admission target (Lertsukpresert, 2008). The program has graduated 1,096 students during the academic years of 2000 to 2006, with just 44 students or 1.4% dropping out (Lertsukpresert, 2008). By recruiting students at the provincial level and training them in regional and district hospitals, the CPIRD program has increased the proportion of rural medical students from 23% in 1994 to 31.5% in 2001 (Lertsukpresert, 2008). The program has been equally successful in terms of retention. Of the 815 graduates from 2000 to 2005, 613 (75%) are working in rural community hospitals, and 152 (19%) have been working there for more than the required three years (Lertsukpresert, 2008). Only 50 (6%) graduates have broken the contract requiring them to work in rural areas, which is substantially less than the national average of 50% (Lertsukpresert, 2008).

In addition to these regulatory and educational strategies, professional replacement strategies (task shifting, training of paramedical staff), financial strategies (voluntary scholarships, fines for breaking compulsory public service, direct financial incentives) and social strategies (recognition, satisfaction, the Rural Doctor Society support network) have all been used in attempts to increase the number of physicians practicing in rural Thailand (Wibulpolprasert & Pengpaibon, 2003). The TMWA scholarship program combines these strategies, providing educational, financial and social support systems for aspiring rural doctors.

The TMWA Rural Scholarship Program fully funds women to attend medical school in return for a commitment to return to practice in the rural areas from which they came. The recipients are selected from the CPIRD program by the TMWA in consultation with the Rural Health Department of the Ministry of Health and Welfare. The program is only five years old and has produced 15 scholarship recipients thus far, averaging about three per year. It was developed ad hoc, in part as a response to the devastation of rural areas after the 2004 tsunami. While some recipients have already graduated and returned to work in their local rural areas, the majority of the recipients are still in medical training. There have been no previous formal evaluations or write-ups of this particular scheme.

In order to better understand the program, qualitative interviews were conducted with three student scholarship recipients, six senior TMWA members and two affiliated members from the Ministry of Health. Although more time is necessary to fully examine the outcomes of the program due to the long-term nature of medical education and retention data, the program's strengths and weaknesses can be analyzed in the context of the existing body of research on similar schemes that are illuminated in the literature review.

Materials and Methods

A comprehensive literature review including government and non-governmental sources serves to contextualize the research and policy arena for this particular issue. Databases used in the review include the Cochrane Library, Global Health/Global Health Archive, Web of Science, Medline, IMSEAR (Index Medicus for South-East Asia Region) and other WHO regional databases. The same terms "Rural Health Services" and "Thailand" were used as a first-level search for each source to maintain consistency, and then narrowed down with the second-level search terms including "recruitment," "retention," "manpower," "supply," "distribution," "human resources" and "human resources for health." Combinations of these terms were also employed using Boolean operators. The review was refined specifically to schemes including the retention of rural healthcare workers as a main outcome or objective. In addition to the results of the database review, the references from relevant articles were also searched, resulting in the identification of three further articles. This wide method of review was used in order to thoroughly examine all possible relevant articles and documents and to allow for the best grasp of the scientific context.

The case study interviews took place with three scholarship recipients, six TMWA members and two key informants from the Ministry of Health. The interviewees were selected based on availability and convenience, with the assistance of the TMWA to facilitate meetings. The individual interviews of the TMWA and Ministry of Health personnel took place in the interviewees' offices, and those of the scholarship recipients were held in a neutral hotel location near to where they studied or worked to avoid inconvenience. Confidentiality was ensured by conducting interviews in quiet, private locations and by concealing the names of the interviewees in the transcripts and analysis. The interviews were originally conducted as an internal audit of the TMWA Scholarship Program, and permission for further research was obtained retroactively by contacting the head of the TMWA as well as interview participants to obtain informed consent. This research process was reviewed and approved by the London School of Hygiene and Tropical Medicine Ethics Committee.

There are seven individual interviews and three focus group discussions. Each interview lasted approximately 45 minutes and was semi-structured, focusing on motivations for and details of the project as well as perceived strengths and weaknesses. The semi-structured style of an interview was chosen to allow the conversation to be guided by the priorities of the respondent and to allow for an individual, more private perspective as opposed to that of the social setting of the focus groups. Each focus group discussion lasted approximately 75 minutes and was used to explore differences that arose in individual interviews (many of the participants were involved in both) and to observe how respondents interact in their respective organizations or affiliations. This was accomplished using pre-existing groups to create a more natural environment; for example, a group of TMWA members or scholarship recipients. The interviews were recorded and transcribed. All but two were conducted in English; the remaining two were conducted in Thai with the aid of a translator.

The interview data was examined using a framework analytical approach and thematic analysis, which was performed by reviewing and

coding transcripts and comparing interviews for commonalities and differences between accounts. The interview data and subsequent thematic analysis was managed manually without the use of computer software.

Literature Review

The studies in the literature review identified three main types of strategies employed to address the asymmetrical distribution of rural and urban doctors: 1) recruiting based on student characteristics—most notably those of rural background; 2) financial incentives—including scholarships, loan repayment and allowances; and 3) educational strategies—including the use of rural schools, increasing rural rotations and requiring rural health modules.

Student Characteristics

This body of literature examined the relationship between a physician's rural background and likelihood to enter and/or stay in rural practice. It is important to note that some of these studies (four out of 15) were prospective, examining the correlation of students' stated intentions of working in rural areas with their rural or urban background, rather than the students who were presently working in the rural areas (Feldman et al., 2008; Girasek, Eke & Szocska, 2010; Guion, Mishoe, Campbell & Taft, 2005; Pasley & Poole, 2009). Because of the possible discrepancy between intention and outcome, as well as possible reporting biases, these studies were not considered to be as rigorous as those that followed up on students' stated intentions or those that examined physicians actually working in the rural areas.

Of the studies that assessed whether rural background increased the likelihood of physicians actually practicing in rural areas, almost all studies found a positive correlation or predictive effect (seven out of eight studies). Included in this group is a rigorous systematic review examining the literature from the United States, Australia and Canada, which found a two-fold increase in the likelihood of rural practice among those of rural background in all three settings (Laven & Wilkinson, 2003).

It is important to note, however, that some studies defined rural background as rural upbringing, and others also included those with past rural exposure (during medical training or otherwise). While both definitions of rural background were found to increase the likelihood of rural practice in various studies, the one study that examined the differences in the definitions found that only rural upbringing had a predictive effect on rural practice (Owen, Conaway, Bailey & Hayden, 2007). The lack of cohesion in the definition of "rurality" is a limitation of this body of literature in general and is explicitly discussed in an editorial which calls attention to the possible implications of this variation on results (Hutten-Czapski, 2009). These studies would become more generalizable if a universal, or at least region-specific, definition of "rurality" were to be applied; such standardization would better facilitate comparison and meta-analysis. Authors should explicitly state how they classify "rural" and what constitutes rural background, which was often not done in the literature.

Of the remaining four studies on characteristics, two examined physician satisfaction, suggesting that satisfaction level amongst rural physicians may predict longevity of rural practice. The first study, from Malawi, used a quantitative survey as well as qualitative interviews and suggested that areas of particular dissatisfaction for the rural physicians surveyed included "what they perceived as unfair access to continuous education and career advancement opportunities as well as inadequate supervision" (Manafa et al., 2009). This study suggested that these issues contribute to rural physician demotivation and thoughts about leaving rural practice. The second study, which took place in the United States and also used survey data, similarly concluded, "Retention was independently associated only with physicians' satisfaction with their communities and their opportunities to achieve professional goals" (Pathman, 1996).

Two studies, one from the United States and one from India, examined the "temperament and traits" of rural doctors, attempting to illuminate those traits which are more common in rural versus urban doctors; these traits included "novelty seeking" (Eley, Young & Przybeck, 2009) and the "willingness to change or try something new" as well as an "attitude, aptitude, desire and dedication to adapt to a setup that is not as sophisticated as that in the cities" (Stephen, 2007).

Financial incentives

Another common theme in the literature was the use of financial incentives to increase the number of doctors in rural areas. Types of incentives that have been used include scholarships, loan repayment and direct financial incentives or allowances. This variety of financial support has had variable levels of success. One of the main issues that arises in making comparisons between programs is that each study or setting used different monetary values, which have different implications depending on the income level in the setting. A more rigorous study using data such as cost-effectiveness or purchasing power parity adjusted data may be more appropriate for global comparison, but this was not present in the literature.

Because of the aforementioned difficulty in comparing these studies, the most useful results are systematic reviews that examine the studies on a larger scale, drawing conclusions from a meta-analysis. A large systematic review examining 43 studies on financial incentives in return for service in rural areas concluded, "Existing studies show that financial incentive programs have placed substantial numbers of health workers in underserved areas and that program participants are more likely than non-participants to work in underserved areas in the long run" (Barnighausen & Bloom, 2009). The studies included in the review, however, were all observational, so causality cannot be assumed. Another limitation of this otherwise comprehensive review is that the studies are largely in high-income settings (all but one) and may have limited applicability to other economies which may not have the capacity to offer or support such schemes. There are also large variations in the monetary value of the incentive, which could also lead to variations in results if a dose-response relationship exists.

Another systematic review examined ten studies on financial incentives in exchange for return-of-service commitments using the "highest level of evidence available" and concluded that while "[t]he majority of studies reported effective recruitment," the programs were less successful with retention, offering limited long-term impact. This study does note, however, that "multidimensional programs appeared to be more successful than those relying on financial incentives alone" (Sempowski, 2004). The application of this review to a middle-income setting such as Thailand should proceed with caution as many of the studies rely on high buyout rates, which may not be possible in a lower-income setting. The review also notes that increasing tuition and debt burdens among medical students may have contributed to the financial scheme's success, but due to the subsidized tuition in Thailand's public medical schools (Jindawatthana, MilintangKul & Rajataramya, 1998), these issues may be less relevant to Thai medical students. The study concluded that even within the ten most rigorous studies, "the quality of the evidence was low and of limited applicability" (Sempowski, 2004). Applicability to Thailand is particularly limited, as all of the studies came from high income countries (USA, New Zealand and Canada).

Educational Strategies

The final type of strategy that emerged from the literature was the use of education-based initiatives including increasing the application and admission of rural students to medical schools, establishing more rurally based schools, expansion of rural internships/rotations, introducing a required rural health module and providing more training and continuing education for those working in rural areas.

The major limitation of this group of literature is that many of the articles simply detail proposed schemes without any follow-up or observational and experimental evidence regarding their effectiveness. Many of the initiatives have also been introduced fairly recently, and results are still pending. Some of these studies will require a long follow-up if they are reporting on rural physician retention, which in the context of this project is a particularly important objective.

Of the articles that did report on outcomes, many reported only on increasing students' interest or that they claimed to have positive experiences, which has limited relevance, as it may not translate into actual rural practice.

Two articles out of the four that report on medical schools designed specifically for rural doctors and situated in rural areas reported significantly higher percentages of their graduates working in rural areas as opposed to non-rural schools (Inoue, Matsumoto & Sawada, 2007; Longombe, 2009) but only one reported increasing long-term retention (Inoue, Matsumoto & Sawada, 2007).

Of the two articles reporting on outcomes of rural medical education programs within medical schools, one reported that the students were more likely than students not in the "rural medical education program" to work in rural areas (Wheat, 2005), and another reported "no

association between exposure to rural practice during undergraduate or residency training and choosing to practise in a rural community" (Easterbrook et al., 1999). Neither study reported on retention.

Though few articles reported on relevant outcomes and even fewer reported on retention over an appropriately long follow-up period, all of these articles still proved valuable as a review of the different methods that have been proposed and implemented.

Mixed Methods and Review Conclusions

The most populous results category in the literature review comprised programs that used a mixed methods approach. Many studies suggest that a strategy that approaches the problem from multiple angles will offer the most appropriate and comprehensive response and may offer the best chance of success. However, while this makes sense intuitively, across all of the categories of the literature review, few studies were experimental in design, and even fewer reported on appropriate outcomes using rigorous methods. In fact, a comprehensive and systematic Cochrane review on "Interventions for increasing the proportion of health professionals practising in rural and other underserved areas" from 2009 finds no well-designed or conclusive trials. The authors state that "[w]hile some of these strategies have shown promise, this review found no well-designed studies to say whether any of these strategies are effective or not" (Grobler et al., 2009). The review concluded that more "[r]igorous studies are needed to evaluate the true effect of these strategies to increase the number of healthcare professionals working in underserved areas" (Grobler et al., 2009). The result of the systematic review is therefore consistent with this smaller, policy-oriented literature review.

TMWA Scholarship Program

Because many of the results from the literature review were inconclusive—based on study designs that were less than rigorous or contexts that were not applicable to low- or middle- income settings—we will now consider a case study of the TMWA scholarship program and examine its strengths and weaknesses to make locally relevant recommendations and to assess the appropriateness of replication and expansion of this type of program as a method to address rural physician shortage.

The TMWA was initially established as a chapter of the Medical Women's International Association to support female doctors as well as advocate for women's health issues.

Thematic analysis of the interview transcripts yielded the following eight themes: 1) the role of women; 2) the importance of a social support network; 3) recognition; 4) spirit of service; 5) recruitment and selection based on rural background and characteristics that make a good rural doctor; 6) follow-up; 7) strengths; and 8) challenges. These themes will be explained and expanded upon using illustrative quotes from the interviews, which will be identified only by the participant's affiliation to preserve anonymity.

Role of women

The TMWA was initially established as a chapter of the Medical Women's International Association to support female doctors as well as advocate for women's health issues. The TMWA Rural Scholarship Program advocates the importance of supporting aspiring female doctors; while "Thai people have equal rights in terms of education, and no discrimination … [fewer] women have the high positions" (TMWA, personal communication, 2009).

It was noted in the interviews that "in [the] past, 80 to 90% of rural doctors were men" (TMWA, p.c., 2009). Interviewees suggested that this may have been due to the fact that a "higher percentage of medical students were men" (TMWA, p.c., 2009) and that "management in rural areas was difficult in terms of safety and security" (TMWA, p.c., 2009). Multiple parties, however, observed that the rural health infrastructure and safety had increased in recent times.

In discussion of the goals of the scholarship program, one participant noted that the group "want[s] to encourage more young girls to come into medicine, especially in rural areas" (TMWA, p.c., 2009) and that they "try to cultivate a good image of women in medicine" (TMWA, p.c., 2009).

Importance of professional/social support network

As mentioned in the literature review, it seems again in this case study that support networks play a large role in the retention of rural physicians. By including the scholarship participants in their association, the TMWA attempts to link them to their preexisting national and international social support network by regular newsletter updates, invitation to annual meetings and financing travel to these meetings.

One member observed that "recipients become junior members of the TMWA as students…. Formerly it was just MDs…. This may help in creating invested interest" (TMWA, p.c., 2009).

Referencing the recipients' membership of the TMWA, another member observed that the "scholarship ties students to mentors … and instill[s] values and encourag[es] them to reach out to younger generations" (TMWA, p.c., 2009). In this way, it was asserted that they are "supported not only in a financial but [also in] a professional and emotional sense" (TMWA, p.c., 2009).

Discussing the network of the TMWA, one member described the association as a "network all over the country" (TMWA, p.c., 2009). The wide-reaching nature of this network is particularly important for new doctors who may not have many contacts in the field and especially for those working in rural and removed settings, who may have fewer chances to interact with their professional peers.

In terms of interaction with the scholarship recipients, one TMWA member noted, "Many [recipients] come to us for advice" (TMWA, p.c., 2009). One TMWA member summarized the goal of including the recipients in the group's meetings as to "inform scholarship recipients about TMWA's purpose, activities and objectives" (TMWA, p.c., 2009).

The subjects of discussion at the annual meeting include a variety of topics such as the "difficulties women doctors face," "ways to facilitate managing family and career" and "international linkages" (TMWA, p.c., 2009). These international linkages occur at "meetings in Asia and other parts of the world" (TMWA, p.c., 2009). Members of the TMWA are always represented at the Medical Women's International Association (MWIA) meeting which occurs every three years, where "people from other countries share experiences" (TMWA, p.c., 2009). The types of experiences which are shared at the forum mirror those discussed at the TMWA meetings and include personal and professional issues faced by women doctors as well as lectures and discussions of current health topics specifically related to women's health (Medical Women's International Association, 2011).

When discussing the importance of having a strong social support network, a member of the TMWA stressed that "medical doctors cannot do it alone" (TMWA, p.c., 2009), highlighting the importance of the association to their profession and the scholarship recipients who are about to enter this field.

Recognition

In addition to the inherent recognition of the recipient's dedication to rural health by the awarding of the scholarship, the association also strives to acknowledge the successes and accomplishments of its many members. This usually occurs at the annual meeting where the association will "select the best lady doctors who served in rural areas and give awards" (TMWA, p.c., 2009). A member of the association also proudly noted that even on a larger, national scale, TMWA "members receive many awards for best doctors" (TMWA, p.c., 2009).

Many additional social and economic benefits of rural medical practice were raised by the interviewees, including the ability to "move up levels in the civil service very quickly … [one] can quickly become level nine [out of 11], or the same as deputy government director or provincial director" (Ministry of Health, p.c., 2009). Other social benefits observed in the interviews included recognition by the King for outstanding rural service. Such social advantages of rural practice will, the TMWA hopes, be recognized by scholarship recipients and encourage retention in a rural setting. This type of recognition is critical, as suggested by the lit-

erature, to cultivate greater job satisfaction, which often leads to higher retention rates.

Spirit of service

The general spirit of service came across as an important theme in almost every interview, and the scholarship program attempts to foster this spirit in each recipient.

In defining the goals of the TMWA, one member stated that the organization aims to "contribute knowledge and services to [the] underprivileged and marginal population" (TMWA, p.c., 2009). The member went on to explain that the organization has run clinics to treat women's health issues and to "provide service to women and the elderly" (TMWA, p.c., 2009). In terms of treating marginalized populations or issues, the organization also "approach[es] sex workers to help" with sexually transmitted infections and general health issues.

One member noted that the original president of the TMWA coined the motto, "To train the mother is [to] help the whole family," noting that the "founding members inspired us to help people" (TMWA, p.c., 2009).

A member of the Ministry of Health characterized the politics of the time period during which the TMWA was established (1960) as a time of "nationalism" and "strong social movement," when there was a "motivation to work in rural areas, to give back to the country, to serve the country" (Ministry of Health, p.c., 2009). There seemed to be a predominant belief in the medical community that graduates "have had privileges to go to university and have to give back" (Ministry of Health, p.c., 2009).

A member of the Ministry of Health stressed that it is important to "try to create a personal incentive for [scholarship recipients], an internal motivation rather than external—this is more challenging but also more sustainable" (Ministry of Health, p.c., 2009). In terms of passing this spirit of service on to the younger generations, one TMWA member noted, "We try to instill objectives of the TMWA in the scholarship recipients" (TMWA, p.c., 2009). Another TMWA member elaborated, "Not only do they receive financial support, but [they] also have a chance to learn about big picture issues, serving the poor, the country and giving back" (TMWA, p.c., 2009).

Interviews indicate that these sentiments have resonated with the scholarship recipients. In response to a question about their motivations for pursuing medicine, one responded, "In my province they have very few doctors because [it] is very far away, close to Laos; I wanted to help people" (Recipient, p.c., 2009).

Such social advantages of rural practice will, the TMWA hopes, be recognized by scholarship recipients and encourage retention in a rural setting.

Recruitment/Selection Characteristics

By selecting the scholarship recipients from the CPIRD program, the TMWA ensures that the candidates are from rural backgrounds and "ensures that candidates actually need the money" (TMWA, p.c., 2009). The scholarship does "not support medical faculties in Bangkok or those with previous funding…. We choose very in-need students" (TMWA, p.c., 2009).

In selection interviews of the candidates who are eligible for the scholarship, the TMWA looks for characteristics that they feel are important for success as a rural doctor. When asked about the personal characteristics that are prerequisites to successful rural practice, one member of the Ministry of Health referred to Thailand's Fourth National Medical Education Conference, which called for "good clinical skills—with heart as well as skill to tackle problems without much help due to the lack of supplies and lack of specialists in rural areas" (Ministry of Health, p.c., 2009). A second identified selection criterion was that the student should be a "good primary healthcare supporter," because, with "so little staff, doctors have to even do accounting" (Ministry of Health, p.c., 2009). The third criterion was that the student should be a "good teacher" as they "have to train community health workers and village volunteers" (Ministry of Health, p.c., 2009). Finally, it was suggested that the student be a "good manager as they may immediately become district hospital director" (Ministry of Health, p.c., 2009).

In addition to practical skills, a member of the Ministry of Health expressed the opinion that "one good doctor is better than ten to 20 average doctors and will derive happiness from this process" (Ministry of Health, p.c., 2009). This observation is particularly applicable to the TMWA scholarship program, which, while small in numbers, aims to sponsor candidates with the most "passionate commitment" (TMWA, p.c., 2009).

Retention

While there only been two graduates of the TMWA Rural Scholarship program thus far, the issue of follow-up and retention was discussed in multiple interviews. One member of the TMWA noted that because the recipients are "select[ed] from their rural home town, they want to go back" (TMWA, p.c., 2009). Though the recipients are bound to serve in the rural community for three years as a result of their CPIRD contract, one member of the Ministry of Health said that they "do not expect doctors to stay in rural areas forever; we have to be practical" (Ministry of Health, p.c., 2009). When asked about the possibility of adding a clause to the scholarship program which would require recipients to serve in the rural areas longer, a member of the TMWA responded that they "don't want to tie the scholarship recipients to work in rural area[s] forever…. After learning and serving in the communities for five or ten years, they should move and use their experience at the district level to support policy making and planning, having had experience first" (TMWA, p.c., 2009). This belief is reflective of the goal of the TMWA to support and produce future leaders in the healthcare profession as it has with its many successful members in the past.

Strengths

The TMWA Rural Scholarship Program has many strengths which were identified by interviewees. One TMWA member expressed gratitude that past recipients have served as strong examples for future recipients and the future of the program, describing the early recipients as "happy to help, good advocates" of the program (TMWA, p.c., 2009).

In terms of effectiveness in increasing retention of rural physicians, one member of the TMWA speculated that the program has been and will be "effective, especially in the Ministry of Health, who are looking for doctors to fill district hospitals all over the country" (TMWA, p.c., 2009). A member of the Ministry of Health also illustrated such optimism, stating that "in five or six years, a director of a hospital will be from this program" (Ministry of Health, p.c., 2009).

There are also many inherent advantages of recruiting from rural areas. Avoiding regional cultural barriers is a primary example: "Rural people are more familiar with rural culture, language, etc., so they often choose to settle down there" (Ministry of Health, p.c., 2009). Likewise, the hometown placement aspect of the program is "helpful in encouraging, ensuring that people will go back and work in rural area if they are from that area…. [It is] also helpful because they are used to the local customs, which can often vary greatly, even [in] language" (TMWA, p.c., 2009). A member of the Ministry of Health noted that many rurally-based students "often settle down in rural areas—the appeal is that it's a simple life" (Ministry of Health, p.c., 2009). This sentiment is echoed by the scholarship recipients themselves: "I prefer rural area[s] because I'm from a northern province and don't think I could adapt to city life [due to] cultural differences" (Recipient, p.c., 2009). Another recipient enjoyed the hometown aspect of the rural placement simply because "I like to be close to my family" (Recipient, p.c., 2009).

By selecting candidates from the pre-established CPIRD program, the TMWA scholarship program has the additional benefit of leveraging the existing governmental infrastructure. This includes the "special budgetary support" earmarked for the expansion of rural hospitals in the program, including the "lump sum operating budget of 8,000 USD [per student] each year, [which] goes to the medical schools to help with increased operating budget with increased students" (Ministry of Health, p.c., 2009). The students of this program are also therefore under the same "special contract to work with Ministry of Public Health after

graduation" (Ministry of Health, p.c., 2009). Because the CPIRD program has been so successful, there is now a firm "commitment of the government to rural development in terms of budget support" (Ministry of Health, p.c., 2009).

Challenges

One of the most vexing challenges concerns the question of medical specialization. Yet the question of specialization did not yield a consistent response from the interviewees. One member of the Ministry of Health stated that "if you become [a] specialist, it is hard to go back to rural areas" (Ministry of Health, p.c., 2009). Another said that there is "no contractual obligation after specialty training, but if students come from rural provinces, they usually stay there" (Ministry of Health, p.c., 2009). One scholarship recipient observed that "many doctors leave after their required three years to specialize, but this is not so much of a problem because we receive new doctors from medical school as soon as the old ones leave to maintain that there are always doctors here [in rural areas]" (Recipient, p.c., 2009). However, this phenomenon often creates instability of doctors in the rural hospitals: "Of the three doctors here [a district hospital], one has been here for three years, one for three months and one for two months" (Recipient, p.c., 2009).

Interestingly, two recipients who were interviewed while they were still in medical training both stated their intentions to stay in the rural areas past their three year obligation but simultaneously stated intentions to specialize; neither acknowledged the potential conflict of these intentions.

Multiple interviewees expressed concern over the risks involved in rural practice for young women, both physically and legally. A member of the TMWA noted that "some provinces in the south are very dangerous with terrorism" (TMWA, p.c., 2009), and a recipient who has graduated and is currently working in one of these areas observed, "It becomes difficult to serve people [due to their] religious affiliation" (Recipient, p.c., 2009). A member of the Ministry of Health also pointed out that "doctors in rural areas [are] at a great risk of [law]suits because they do not have well-supported staff, making it easier to do something wrong" (Ministry of Health, p.c., 2009).

When asked about ways the scholarship program could be improved, multiple respondents noted that candidates should be made aware of the opportunity earlier. One recipient recalled, "Before I received the funding, I had applied for bank loans" (Recipient, p.c., 2009). A member of the Ministry of Health said, "The TMWA scholarship program helps the social inequality, but it would be better if we could help them even in high school or primary school to be able to continue education to go to medical school" (Ministry of Health, p.c., 2009). A recipient echoed this sentiment, suggesting that the TMWA should "probably go through high school, because otherwise [candidates] don't know they can have the option to even pursue medical school" (Recipient, p.c., 2009). Another recipient agreed: "The earlier the better—so people will know to study hard to inspire them to strive to pursue medicine" (Recipient, p.c., 2009).

One TMWA member expressed concern that the annual meetings and newsletters may not be enough in terms of support for the recipients, and that there is still a "need to get them more involved, to empower [them]" (TMWA, p.c., 2009). However, when asked about the support received from the TMWA, one recipient noted that the "TMWA secretary calls many times" and that the "meetings are fine right now; [we] can call them directly if we need to" (Recipient, p.c., 2009).

Discussion

Although the Cochrane Review did not find conclusive experimental evidence for any particular strategy to address the disequilibrium of physicians in rural and urban areas (Grobler et al., 2009), many of the strategies which were identified as anecdotally successful in the literature review are also present in the TMWA Rural Scholarship Program.

In terms of strategies related to physician characteristics, the literature review found a strong predictive effect of rural background leading to rural practice. The definition of rural background varied from rural upbringing to rural exposure during training, with the former found to be more predictive than the latter. The TMWA Rural Scholarship should therefore train recipients, all of whom have rural upbringings, by supporting rural exposure during medical training, thus satisfying both definitions of "rural background."

Another set of studies found that physician satisfaction was predictive of rural retention. One such study highlighted the importance of "continuous education and career progression strategies" (Manafa et al., 2009). According to the interviews, it is apparent that members of both the TMWA and the Ministry of Health, which runs the CPIRD program, seek to avoid the stagnation of the recipients' careers and do not expect them to remain in the rural areas ad infinitum. Interviewees in all three categories (TMWA, Ministry of Health and Recipients) mentioned specialization and moving up in the healthcare system. The second study, which reported on the relationship between satisfaction and retention, reported similar findings: "Retention was independently associated only with physicians' satisfaction with their communities and their opportunities to achieve professional goals" (Pathman, 1996).

By recruiting students from rural areas and encouraging hometown placement, a desire also expressed by the recipients, the TMWA scholarship seems to facilitate and encourage this kind of satisfaction with the community. However, there also appears to be a tension between the desire to achieve professional goals and long-term rural retention. The two objectives seem to be most at odds when physicians leave the rural areas to specialize, leaving the question of their return open-ended. This dilemma was acknowledged by TMWA members as well as scholarship recipients; however, it was not considered a threat to the program, as TMWA does not expect that the recipients will necessarily work in the rural areas for their entire careers. Indeed, TMWA encourages recipients to attain their highest possible professional status with the hope that their accomplishments—including their rural service—will provide a role model to aspiring physicians seeking the highest levels of professional recognition, as well as facilitate better judgment as recipients attain higher policymaking positions later in their careers. However, this leaves the potentially negative consequences on rural hospitals and rural healthcare of the turnover, which results from physicians leaving the rural areas after their three-year contractual obligation, unaddressed.

The final set of studies on characteristics discusses gender differences in rural doctors, noting that most rural physicians tend to be men. One study concludes that "family and community ties played a key role in influencing practice location…. Recruitment efforts should focus on candidates from rural areas and not underestimate the impact of family in decisions about work location" (Lindsay, 2007). The rural recruitment and hometown placement of the TMWA Scholarship Program ensures that the candidates, who also consistently observe that they prefer to be close to their families, are able to do so.

In addition to recruiting students on the basis of their rural characteristics and background, which is at the heart of the TMWA Scholarship strategy, many of the educational strategies identified as successful by the literature review included increasing rural internships and rotations as well the number of rurally based medical schools. While all of the TMWA scholarship recipients complete rural internships and rotations (which occur in the second half of the six-year medical education in Thailand), perhaps a clause should be introduced into the scholarship to ensure that the recipients receive their training at rural medical schools for the first three years as well allowing for an earlier exposure to rural practice and lifestyle in their medical training. At present, the students receive medical training at a variety of different institutions depending on their geographical origin, but not all of these institutions are rural.

The disparate strategies related to financial incentives, of which the scholarship program is but one, are difficult to summarize and generalize. The two most rigorous studies, both systematic reviews, found that while financial incentives were successful in recruiting rural physicians, they had less success with long-term retention. One of the reviews did, however, report that "multidimensional programs appeared to be more successful than those relying on financial incentives alone" (Sempowski, 2004). Given the rural recruitment, hometown placement and strong social support network of the TMWA Rural Scholarship Program, it would certainly seem to fall under the category of a "multidimensional" program which provides much more than simply financial assistance for its recipients. However, several interviews indicated that information regarding the scholarship program should be provided earlier so that students in high school who otherwise would not have been able to consider a medical career could take the necessary steps to achieve this goal. This may also create additional incentive and motivation for students and may, in turn, increase the number of rural applicants.

The importance of the social support network aspect of the scholarship program should not be underestimated. While the number of

women doctors in Thailand remains fairly equal to the number of male doctors, the TMWA contains many of the most successful physicians in the country, with its members proudly over-representing the number of women in the highest possible positions. The TMWA has about 1,520 members, which comprises 10.3% of all women doctors in Thailand. While women typically do not hold the highest positions in the medical profession in Thailand (and many other countries), many members of the TMWA have had extremely successful careers and are beginning to outnumber their male counterparts in many esteemed academic, governmental and clinical appointments.

Though it is too early for proper evaluation on retention, having combined many different successful strategies identified in the literature, it seems that the TMWA represents a promising prospective program. Because the strength of the program relies heavily on the vast social support network of the organization and because this is one of the distinctive aspects of the program, it would be crucial to identify a similar social support network, in addition to the existing infrastructure, if the program were to be successfully replicated elsewhere. The prerequisite infrastructure for replication should include a governmental commitment, which includes recognizing the shortage of rural doctors as a problem, a financial commitment to remediating the problem and a preexisting rural health infrastructure—including rural hospitals, accessibility and transportation—as well as strong medical education centers and training programs for aspiring rural students. In addition to these structural elements, cultural and gender-related factors should also be explored and considered in other possible settings. A prospective program may have the greatest potential for success and impact in venues where elevating the status of women who struggle to gain equal recognition and opportunity is artificially or traditionally constrained, but it is important to keep in mind that a prospective program may face difficulties in places where women are unable or forbidden to gain education, medical or otherwise.

Policy Recommendations

The results from this report may influence policy at three distinct levels: the TMWA, the Thai Ministry of Health and beyond in terms of expansion and replication elsewhere.

TMWA

- Selection of candidates can become more rigorous by the identification and use of standardized positive traits
- Encourage recipient involvement in TMWA social support network through workshops, activities and mentorships
- In addition to recruiting girls from rural areas, the TMWA should consider sending recipients exclusively to rural medical schools
- Consider recruiting, or at least informing students, about the scholarship earlier

Ministry of Health

- Maintain and expand programs to support rural physicians
- Increase fines and consider other penalties for breaking contractual obligation to work in the rural areas to adjust for inflation
- Re-evaluate the current "lazy allowance" as this may have the unintended consequences of facilitating and encouraging physicians to break their contracts by paying off fines
- Expand and encourage rural medical schools as well as rural rotations and internships
- Encourage future research in Thailand to allow for context-specific, rigorous evaluations

Expansion beyond Thailand

- Ensure appropriate infrastructure to facilitate such a program, such as transportation, safety, security, etc. as well as good rural medical schools
- Evaluate governmental and/or Ministry of Health programs and support
- Identify social support networks—foster relationships by connecting people who have had similar experiences and involve the new scholarship recipients in these networks
- Develop and apply a standardized, rigorous and transparent selection process

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